REMARKS

Claims 1-25 and 29-53 are now pending in the application. Applicants have amended claims 1 and 2 and amended the status identifiers for claims 31-42. Applicants have also added claims 55-58. Applicants submit that the amendments to the claims contained herein are supported in the specification as currently disclosed. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

CLAIMS

Claims 31-42 stand objected to because their status identifiers are incorrect. Applicant previously withdrew claim 29, upon which claims 31-42 are dependent. Applicants agree that the Examiner's objection is proper and have changed the status identifiers for claims 31-42 to indicate that Applicants have also withdrawn these claims. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 3, 13 and 15-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tateishi et al (U.S. Pat. No. 5643690). This rejection is respectfully traversed.

In light of currently amended claim 1, Tateishi et al. does not teach every limitation of the recited claims. Tateishi et al. fails to teach of an electrochemical cell including a solid polymer electrolyte having a cation exchange membrane.

As best understood by Applicants, Tateishi et al. disclose an electrochemical cell in which the solid polymer electrolyte includes a carbonate compound. Thus, Tateishi et al. necessarily discloses an anion conducting membrane. The use of a carbonate compound in the solid polymer electrolyte precludes the use of a cation exchange resin as recited in Applicants' claims. The carbonate compound anion exchange member disclose in Tateishi et al. operates in a substantially different way then the cation exchange resin recited in Applicants' claims. The electrochemical processes operate in reverse of one another and require a different combination of reactant gasses. Furthermore, the operating environments are vastly different. In the molten carbonate fuel cell of Tateishi et al., the operating temperatures are on the order of 400°c - 600°c and anions that result from the flow of carbon dioxide and oxygen at the cathode migrate through the solid polymer electrolyte towards the anode. In the PEM fuel cell disclosed and claimed by Applicants, the operating temperatures are in the range of 60°c - 80°c, and the cations that result from the flow of oxygen over the anode migrate through the solid polymer electrolyte towards the cathode. These two processes cannot coexist within a single electrochemical cell.

Applicants respectfully submit that Tateishi et al. do not disclose the electrochemical cell composition claimed by Applicants. Tateishi et al. disclose an electrochemical cell comprising an ion-conducting membrane impregnated with carbonate, which precludes the use of a cation exchange resin as claimed by Applicants. For the reasons set forth here, claim 1, as currently amended, is allowable under §102(b). Therefore, reconsideration and withdrawal of the rejection of claim 1 is respectfully requested.

Claims 3, 13 and 15-21 depend from claim 1 and are allowable for at least similar reasons as claim 1. Therefore, reconsideration and withdrawal of the rejection of claims 3, 13 and 15-21 is respectfully requested.

At least claims 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese publication JP 08-185870 (herein called JP'870). This rejection is respectfully traversed.

In light of currently amended claim 1, JP'870 does not teach every limitation of the recited claim. Like Tateishi, et al. JP'870 discloses a multi carbonate fuel cell. Thus, the differences discussed above with respect to Tateishi et al. are equally applicable to JP '870. Furthermore, JP'870 fails to teach of electrically conductive contact element having an electrically conductive coating which is in direct contact with a reactant gas.

As best understood by Applicants, JP'870 teaches "a protection film of metallic oxide laid on the gas concordant surface of the cathode 12 of substrate 14 in such a state as not being in direct contact with the cathode gases." Examiner asserts that a "protection film of metallic oxide laid on the gas concordant surface of the cathode12 of substrate 14...is necessarily in contact, directly or indirectly, with the reactant gas because the cathode structure of the specific fuel cell disclosed by JP'870 is generally porous." Applicants respectfully disagree.

Examiner argues that there is a path by which a reactant gas, through diffusion in the cathode, may reach, touch or come in contact with the metal oxide layer. Applicants respectfully submit that the path described by Examiner's analysis is circuitous, not

direct, and does not ensure that the specific fuel cell disclosed by JP'870 possesses the characteristics of the claimed product.

For the reasons set forth here, Applicants submit that claim 1, as currently amended, is allowable under §102(b). Therefore, reconsideration and withdrawal of the rejection of claim 1 is respectfully requested.

At least claim 1 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Gyoten et al. (U.S. Pat. No. 7005205). This rejection is respectfully traversed.

In light of currently amended claim 1, Gyoten et al. does not teach every element of the recited claim. Gyoten et al. fails to teach of an electrically conductive contact element having an electrically conductive coating which is in direct contact with the electrode and a reactant gas.

As best understood by Applicants, Gyoten et al. discloses an electroconductive separator in which a resin layer is in direct contact with the electrolyte-membrane electrode, not a metallic oxide layer. Gyoten et al. teaches that a metallic oxide layer may be interposed between the substrate and the resin layer, but that the resin layer remain in contact with the electrolyte-membrane electrode.

Unlike Applicants, Gyoten et al. do not teach of a metallic oxide coating on the substrate that is in direct contact with the electrode. For the reasons set forth here, Applicants submit that Examiner's rejection of claim 1 under §102(e) as anticipated by Gyoten et al. has been met.

At least claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Hwang et al (U.S. Pat. No. 6090228). This rejection is respectfully traversed.

In light of currently amended claim 1, Hwang et al. does not teach every element of the recited claims. Hwang et al. fails to teach an electrochemical cell in which the ion conducting membrane comprises a solid polymer electrolyte formed of a permeable body containing a cation exchange membrane. Furthermore, Hwang et al. fails to teach of a separator, in its finished form, which has a metallic oxide coating is disposed on its substrate.

As best understood by Applicants, Hwang et al. discloses an anticorrosive treatment method for a separator of a molten carbonate fuel cell. For the reasons already set forth above, Applicants respectfully submit that Hwang et al. fails to teach of a proton exchange membrane fuel cell.

Furthermore, Applicants understand that the method disclosed in Hwang et al. may result in the formation of an aluminum oxide layer on the treated substrate and that any such oxide layer is removed to provide the finished product.

Unlike Applicants, Hwang et al. do not teach of an electrochemical cell comprising a proton exchange membrane separated by an electrically conductive element further comprising a metallic oxide coating. For the reasons set forth here, Applicants submit that Examiner's rejection of claim 1 under §102(b) as anticipated by Hwang et al. has been met.

In summary, Applicants submit that Examiner's rejections under §102, based on Tateishi et al., JP'870, Gyoten and Hwang have been traversed. For the reasons set

forth here, claim 1, as currently amended, is allowable under §102. Therefore, reconsideration and withdrawal of the rejections of claim 1 are respectfully requested.

Applicants submit that claims 3, 13 and 15-21 depend from claim 1 and are allowable for at least similar reasons as claim 1. Therefore, reconsideration and withdrawal of Examiners rejections of claims 3, 13 and 15-21 are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 2, 14 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tateishi et al (U.S. Pat. No. 5643690) in view of Gordon (U.S. Pat. No. 4146657). This rejection is respectfully traversed.

In light of currently amended claim 1, Tateishi et al. fails to show, teach or suggest applying films of tin oxide containing a specified amount of Fluorine to a separator used in an electrochemical cell comprising a proton exchange membrane. Applicants respectfully submit that this rejection is moot as claim 1, from which claims 2, 14 and 22 depend, has been amended and is believed to be in condition for allowance. Accordingly, reconsideration and withdrawal of Examiners rejections of claims 2, 14 and 22 are respectfully requested.

Claims 4-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tateishi et al (U.S. Pat. No. 5643690) as applied to claim 1, and further in view of Applicant's Admitted Prior Art (hereinafter AAPA). This rejection is respectfully traversed.

Gordon discloses electrically conductive films of tin oxide that are also characterized by extremely good reflectance of infrared radiation, but does not disclose other properties of the oxide films that would render them useful in an electrochemical

fuel cell, such as corrosion resistance and hydrophylicity. These material properties vary greatly and render many, if not most, metallic oxides unfit for fuel cell applications. Gordon does not suggest the desirability and thus the obviousness of applying a film under its method to the specific environment of a fuel cell. Instead, Gordon teaches the desirability of applying a tin oxide film to the silica-based substrates found in solar cells and semiconductors used in electrical circuitry. One skilled in the art of designing fuel cells would have no reasonable expectation of success in combining Gordon with Applicant's AAPA to improve upon fuel cell designs.

For the reasons set forth here, Applicant respectfully submits that claims 4-12 are in condition for allowance. Accordingly, reconsideration and withdrawal of Examiners rejections of claims 4-12 are respectfully requested.

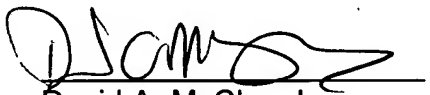
NEW CLAIMS

New Claims 55-58 have been added to more particularly point out and distinctly claim the subject matter applicants regard as the invention. Applicants submit that claims 55-58 are supported in the specification as currently disclosed. Applicants also submit that the new claims are currently in condition for allowance over the art of record in view of the arguments set forth above. The Examiner is respectfully requested to enter and allow claims 55-58 in view of the amendments and remarks incorporated and contained herein. Applicant also submits that the new claims are currently in condition for allowance under 35 U.S.C. 102(b) and (e) and under 35 U.S.C. 103(a), based upon the arguments already set forth herein.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,



Dated: March 29, 2007

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